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AUTHOR Ludy, Robbie; Blunt, Merv
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ABSTRACT

This paper describes the increased enrollment of individuals with disabilities in institutions of higher education and the special role of assistive technology resources making that possible. Assistive technology is defined as both devices and services which increase, maintain, and improve the functional capabilities of individuals with disabilities. The paper describes important points in the development of federal legislation affecting individuals with disabilities and their participation in education. In particular the paper describes the Technology-Related Assistance for Individuals with Disabilities Act of 1988. This act made discretionary funds available to all states to facilitate their development of consumer-responsive, statewide technology-related projects. Institutions of higher education can obtain valuable information about ways to serve their students by contacting their state's assistive technology project. Types of information and assistance may include accommodation requirements, computer accessibility devices, augmentative communication devices, and modifications of residential and/or student life. A list of 53 state assistive technology projects' telephone and facsimile numbers is included. (JB)

Assistive Technology Resources: Building Bridges for Institutions of Higher Education

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Today, more than ever before, individuals with disabilities are entering institutions of higher education. Along with clothes, CD players, and calculators, these incoming students bring a unique set of needs which challenge those schools that have accepted them as part of the student body. Often institutions of higher education have had little or no experience in identifying and serving students with diverse physical and learning needs. By accepting students with special needs, institutions have an ethical as well as a legal obligation to provide an educational experience equivalent to those experiences provided for regular students. In an effort to fulfill this obligation, institutions of higher education are exploring and developing innovative ways to meet the unique learning needs associated with this new population.

Although their presence has been small, individuals with disabilities are not strangers to institutions of higher education. Since World War II, returning veterans have challenged institutions to provide facilities and programs to meet their unique needs. Notetakers, readers for individuals with visual impairments, and structural modifications to facilities were only a few of the accommodations provided by some institutions of higher education. Services were frequently limited in both quantity and quality, usually focusing on the physical facility,

not the learning needs of the student. It was not unusual for the individuals who were responsible for delivering services to have little training and few educational experiences with people who had disabilities.

As institutions of higher education became more accustomed to having students with orthopedic or visual disabilities, they realized that many of those same services could be utilized with an expanded population. Entering classes began to take on a new guise. Membership was made up of increasing numbers of students with learning requirements that went beyond physical needs (e.g., older students returning to school, international students with limited English skills, students without extensive educational experiences because of their limited financial resources). Institutions of higher education developed new support systems and expanded existing programs, such as tutoring and student mentoring. New programs were developed to provide specific instruction in learning strategies as well as to enhance the students' previous educational experiences.

In the 1970's, the federal government passed two significant pieces of legislation related to individuals with disabilities. One was the Rehabilitation Act of 1973, particularly Section 504 (Office for Civil Rights 1991). The other was the Education for All Handicapped Children Act (P.L. 94-142). These sweeping reforms brought the needs of students with disabilities into the national spotlight. The public became increasingly aware of the inequity of educational opportunities available to individuals with disabilities as compared to other students. States and local school districts hastened to provide appropriate educational

programs and services within the public schools. The number of students enrolled in special education programs rose dramatically. Today, an increasing number of students with disabilities successfully meet requirements and graduate from public schools.

As students with disabilities progressed through public schools they and their parents came to expect specialized services and accommodations. This attitude continued as they began to search for post-secondary education programs which would provide the necessary education to help them achieve their life goals. The demand for programs in higher education that would and could meet their unique learning and physical needs developed. Additional pieces of legislation such as the Americans with Disabilities Act of 1990 (ADA), and a reauthorization of P.L. 94-142, now called the Individuals with Disabilities Education Act (IDEA), supported demands for equal opportunities in education.

Today, partly as a result of this public demand, institutions of higher education accept increasing numbers of students with disabilitities and explore varied and innovative ways to meet their educational and life needs. More institutions of higher education are making a commitment to blend mandated and non-mandated services, creating a rich and successful environment for all their students (Murphy and Loving 1987). Provision of appropriate assistive technology is one way to fulfill the promise.

Assistive technology is a broad term used to describe both devices and services which increase, maintain, and improve the

functional capabilities of individuals with disabilities. Congress acknowledged the potential of assistive technology to redefine what is possible for persons with a wide range of disabilities when it passed the Technology-Related Assistance for Individuals with Disabilities Act of 1988 (P.L. 100-407), also referred to as the "Tech Act". The Tech Act was the first legislation ever passed by Congress which not only expanded the availability of assistive technology services but also placed emphasis on consumer needs.

In March 1994 President Clinton signed the reauthorization of the "Tech Act" which calls for consumer responsiveness and system change along with legal advocacy to develop and implement statewide programs of technology-related assistance for individuals with disabilities. The reauthorization continues financial assistance to states for the purpose of supporting advocacy activities and changes in existing delivery systems. Specific emphasis is given to reaching and supporting unserved, underserved, and rural populations.

As noted earlier, assistive technology is a term which refers to both devices and services developed to promote the functional capabilities of individuals with disabilities. The Tech Act defines an assistive technology device as "... any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (20 U.S.C. Chapter 33, Section 1401 [25]). The devices encompass a wide spectrum of technical sophistication. The flexibility and diversity of assistive

technology's potential are exemplified in the fact that it includes items such as the following: voice-output communication devices, electric wheelchairs, door knob turners, magnifiers, large screen computers, and playing card holders. All of these devices can enhance the quality of everyday life, promote participation in society, and indirectly affect all of society (Blackhurst and Shuping 1991).

Assistive technology also includes services to and for persons with disabilities. The legal definition of assistive technology services as it appears in the IDEA and ADA is "any service that directly assists an individual with a disability in the selection, acquisition or use of an assistive technology device." These services include but not limited to: information and referral assistance, training for consumers (including family members) and service providers, equipment exchange programs, development of guides and materials, and peer support groups. The "Tech Act" mandates that information related to assistive technology be made available to all interested persons.

The Tech Act made discretionary funds available to all states to facilitate their development of consumer-responsive, statewide technology-related projects. In 1989, a state grants program was established to serve as a catalyst for the development of state projects across the United States and its territories. Through a competitive award process states are awarded grants for three years. At the time of this publication, 49 states, the District of Columbia, Puerto Rico, and American Samoa had successfully competed for funds under this act and

established nationally approved projects which are administered by the National Institute on Disability and Rehabilitation Research (NIDRR).

State projects show great diversity in the implementation of national guidelines and carry out a variety of authorized activities. Projects develop their structure and determine activities to meet the unique needs of individuals within their states. State projects are mandated to make assistive technology services available to all individuals with disabilities regardless of age residing in that state. Activities include, but are not restricted to, statewide needs assessments, training programs to promote awareness, development or expansion of a system for public access to information and referral, cooperative interagency agreements, and development of model delivery systems. States receiving federal funding have developed diverse delivery systems. For example, Kansas delivers services through a multi-site program, whereas Missouri utilizes a central location as its primary delivery system while supporting satellite demonstration sites.

As we have noted, public schools have a longer history of providing educational services to a larger and more diverse population than do institutions of higher education. Many public schools have been proactive in seeking and developing assistive technology for their students. Now that many of those students are entering post-secondary education programs, institutions of higher education must become more aggressive and innovative in finding ways to meet student needs, including the need for assistive technology.

Utilization of state assistive technology programs is a vital component in bridging the educational services and assistive technology. As noted earlier, state assistive technology projects are designed to assist individuals of all ages. Institutions of higher education can obtain valuable information about ways to serve their students by contacting the state's assistive technology project.

Although specific information and assistance varies from state project to state project, there are several relevant topics on which institutions of higher education should look to state projects for help. Examples include how institutions of higher education can meet the accommodation requirements specified by the American with Disabilities Act; how computer accessibility can be promoted, including selection of necessary software and the adaptation of hardware such as expanded keyboards, touch screens, and braille display; and the use of environmental controls such as remote control switches, velco attachments, and pointer sticks. Information can be obtained concerning augmentative communication such as electronic communication devices and speech synthesizers, assistive listening such as telecommunicative devices for people who are deaf or speech impaired (TDD), closed caption television, and sound field FM systems; aids for those who cannot read regular print such as large print books, brailled materials, cassette tape recordings, and mobility guidelines.

Information available from state projects is not restricted to the academic. State project staff members can suggest

modifications of residential and/or student life activities which potentially help students become active members of the educational community. Such modifications allow students with special needs to move from only having physical accessibility to a situation in which they have cultural access to all campus activities, social and academic (Murphy and Loving 1987).

The examples provided are not exhaustive. They are intended to serve as a starting point for institutions of higher education when they contact their state's assistive technology project. Institutions of higher education should utilize collaborative decision making and committee processes within their institution to determine local needs. They should seek the assistance of state projects staff in developing inservice training programs for faculty, administrators, and staff (Edyburn 1991).

Each educational system has ethical and legal obligations to provide equal learning opportunities for all students accepted into its programs. As institutions of higher education welcome increasing numbers of students with diverse learning needs, they must hone their awareness. As the institutions develop programs and explore solutions to the challenges brought by students with disabilities, they must utilize resources, including those beyond their campus. If the past 25 years can be used as a yardstick for technological advancement, the next 25 hold great promise for the student with disabilities (Murphy and Loving 1987). Institutions of higher education must cross the bridge to assistive technology resources available within their states so that they can provide the highest quality of education possible for all students.

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Murphy, Harry J. , and Loving, Steven D. 1987. Postsecondary educational support services for the 21st century. Paper presented at the Council for Exceptional Children's Topical Conference on the Future of Special Education. Orlando, FL. Nov. 15-17, 1987.

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A Directory of State Assistive Technology Projects

Alabama Technology Access Project

Phone (205) 288-0240

FAX (205) 288-7171

American Samoa Assistive Technology Project

Phone (684) 633-2336 FAX (684) 633-2393

Assistive Technologies of Alaska

Phone (800) 770-0138 (Voice/TDD)

FAX (907) 274-0516

Arkansas Increasing Capabilities Access Network

Phone (501) 666-8868 (Voice/TDD)

(800) 828-2799 (in state only)

FAX (501) 666-5319

California Assistive Technology System

Phone (916) 323-0595

FAX (916) 327-6919

Colorado Assistive Technology Project

Phone (303) 420-2942 (Voice/TDD)

FAX (303) 420-8675

Connecticut Assistive Technology Project

Phone (203) 298-2042

FAX (203) 298-9590

Delaware Assistive Technology Initiative

Phone (302) 651-6790

(302) 651-6794 (TDD)

FAX (302) 651-6793

D.C. Partnership for Assistive Technology

Phone (202) 877-1498

FAX (202) 723-0628

Florida Assistive Technology Project

Phone (904) 488-8380

FAX (904) 488-8062

Georgia Tools for Life

Phone (800) 726-9119

FAX (404) 657 3086

Hawaii Assistive Technology System

Phone (808) 532-7110 (Voice/TDD)

FAX (808) 532-7120

Idaho Assistive Technology Project

Phone (208) 885-9429

FAX (208) 885-9056

Illinois Assistive Technology Project

Phone (800) 852-5110 (in State Only Voice/TDD)

(217) 522-7985 (Voice/TDD)

FAX (217) 522-8067

Indiana Attain (Accessing Technology Through Awareness in Indiana) Project

Phone (800) 545-7763

FAX (317) 232-6478

Iowa Program for Assistive Technology

Phone (800) 331-3027

FAX (319) 356-8284

Kansas Assistive Technology Project

Phone (316) 421-6550 x1890 or x1894

FAX (316) 421-6550 x1702

Kentucky Assistive Technology Services Network

Phone (502) 573-4665 (Voice/TDD)

FAX (502) 573-3976

Louisiana Technology Assistance Network

Phone (800) 922 DIAL

(800) 256-2633 (TDD)

FAX (504) 342-4419

Maine Consumer Information & Technology Training Exchange (Maine Cite)

Phone (207) 621-3195 (Voice/TDD)

FAX (207) 621-3193

Maryland Technology Assistance Program

Phone (800) TECH-TAP

(410) 333-4975 (Voice/TDD)

FAX (410) 333-6674

Massachusetts Assistive Technology Partnership Center

Phone (617) 727-5540

(617) 345-9743 (TDD)

FAX (617) 735-6345

Michigan Tech 2000

Phone (517) 373-4056

FAX (517) 373-4058

Minnesota Star Program

Phone (800) 332-3027

(612) 296-9962 (TDD)

FAX (612) 282-6671

Mississippi Project Start

Phone (601) 354-6891 (Voice/TDD)

FAX (601) 354-6080

Missouri Assistive Technology Project

Phone (800) 647-8557

(800) 647-8558 (TDD)

FAX (816) 373-9314

Montech (Montana)

Phone (406) 243-5676

FAX (406) 243-2349

Nebraska Assistive Technology Project

Phone (402) 472-3647 (Voice/TDD)

FAX (402) 471-0117

Nevada Assistive Technology Project

Phone (702) 687-4452 (Voice)

(702) 687-3388(TDD)

FAX (702) 687-3292

New Hampshire Technology Partnership Project

Phone (603) 224-0630 (Voice/TDD)

FAX (603) 228-3270

New Jersey Technology Assistive Resource Program

Phone (609) 292-7496

FAX (609) 292-8347

New Mexico Technology Assistance Program

Phone (800) 866-ABLE (Voice/TDD)

FAX (505) 827-3746

New York State Traid Project

Phone (518) 474-2825 (Voice)

(518) 473-4231 (TDD)

FAX (518) 473-6005

North Carolina Assistive Technology Project

Phone (800) 852-0042

(919) 850-2787 (Voice/TDD)

FAX (919) 850-2792

North Dakota Interagency Program for Assistive Technology

Phone (701) 265-4807

FAX (701) 265-3150

Ohio Train

Phone (614) 438-1450

FAX (614) 438-1257

Oklahoma Assistive Technology Project

Phone (405) 424-4311

FAX (405) 427-2753

Oregon Technology Access for Life Needs Project

Phone (503) 399-4950

FAX (503) 399-6978

Pennsylvania Initiative on Assistive Technology

Phone (215) 204-1356

FAX (215) 204-6336

Puerto Rico Assistive Technology Project

Phone (809) 764-0000 x4408

FAX (809) 763-4130

Rhode Island Assistive Technology Access Project

Phone (800) 752-8038 x2608

TDD (401) 7016

FAX (401) 473-6005

South Carolina Assistive Technology Program

Phone (803) 822-5404 (Voice/TDD)

FAX (803) 822-4301

Dakota Link (South Dakota)

Phone (800) 645-0673 (Voice/TDD)

FAX (605) 394-5315

Tennessee Technology Access Project

Phone (800) 732-5059 (in state only)

(615) 532-6530

FAX (615) 532-6612

Texas Assistive Technology Project

Phone (512) 471-7621

FAX (512) 471-7549

Utah Assistive Technology Program

Phone (800) 333-Utah

FAX (801) 750-2355

Vermont Assistive Technology Project

Phone (802) 241-2620 (Voice/TDD)

FAX (802) 241-3052

Virginia Assistive Technology System

Phone (804) 662-9990 (Voice/TDD)

FAX (804) 662-9478

Washington State Assistive Technology Project

Phone (206) 438-8049

FAX (206) 438-8007

West Virginia Assistive Technology System

Phone (800) 841-8436

FAX (304) 293-7294

Wistech (Wisconsin)

Phone (608) 266-5395

(608) 267-6720 (Voice)

(608) 266-9599 (TDD)

Wyoming New Options in Technology

Phone (307) 777-6947

FAX (307) 777-5939